Bioc 310 Syllabus and Course Policy — Section 25

Bioc 310 Section 3 Instructor:

Prof. George Phillips (georgep@rice.edu; GRBH W200Q) conducts research on the atomic basis of the function of proteins and other biological molecules by biochemical, biophysical, computational, and theoretical methods.

Dr. Dereth Phillips (derethp@rice.edu; Anderson 340) serves as a general resource for all current Bioc 310 students.

Office Hours: Prof. G. Phillips's office hours are by appointment. Dr. D. Phillips's office hours are Wednesdays at 3 pm or by appointment.

Course objectives and expected learning outcomes

Upon completion of Bioc 310 Section 3, students should be able to:

- Describe the current state of scientific knowledge and key open questions regarding plant peroxisome biogenesis and function
- Perform original research using techniques that may include molecular genetics, cell biology, bioinformatics, biochemistry, and plant physiology, with an awareness of the advantages and limitations of each in the context of the questions being addressed
- Design experiments with appropriate positive and negative controls
- Identify and troubleshoot problems encountered when performing particular protocols
- Analyze data collected and identify the relevance of findings to the scientific problem at hand
- Effectively communicate research experience through written and oral reports

Requirements for Bioc 310 course credit

Summary: Bioc 310 Section 3 students perform research in the laboratory of Prof. G. Phillips in the BioSciences Department. Students are required to spend at least 3 hours per week in the laboratory for each semester hour of credit. If taken for 3 or more hours, Bioc 310 counts as one required lab course but not as 300-level elective in Natural Sciences or Engineering. Bioc 310 requires a research proposal, weekly reports and a final project (research paper in the fall semester / paper or poster presentation in the spring semester pending professor permission and RURS acceptance). The prerequisite is either Bioc 111 or Bioc 211; instructor permission is required. Students will not receive course credit if they are being paid for their work. It is strongly recommended that all students register for 3 credit hours their first semester of Bioc 310.

Registration: Obtain a special registration form (http://registrar.rice.edu/student/special_registration/), obtain Prof. G. Phillips's signature, and register for Bioc 310 section 3. Students should register before the beginning of the semester. Students who begin research late will be required to make up missed research hours over the course of the semester.

Required writing assignments

Research proposal: Prepare a 1-page research project proposal containing an abstract that summarizes the basis of the planned project, experimental aims for the semester, and references. Develop this proposal in consultation with Prof. G. Phillips and your mentor and submit to Prof. G. Phillips and your mentor before the end of the second week of classes.

Weekly progress reports: Send weekly email progress reports to Prof. G. Phillips and your research mentor. This weekly email will include: hours in lab that week, experiments conducted, results obtained, conclusions drawn, and plans for the following week. These reports will be due by the end of each week (Saturday, 11:59 pm). Please consult the weekly report section of the Bioc 310 manual for the suggested format and examples.

Final project: A research paper is required in the fall semester and a poster or a research paper is required in the spring semester. Submit drafts of papers or posters to your mentor and Prof. G. Phillips for comments prior to the final deadline (see the deadlines below). The research paper is due at 5 pm on the last day of finals; the poster will be presented at the Rice Undergraduate Research Symposium (RURS) in the spring (http://rurs.rice.edu/). It is the student's responsibility to register for the poster session.

Schedule and Deadlines

All written materials (student agreement form, proposal abstract, weekly reports, paper/poster drafts and final paper/poster) must be submitted Prof. G. Phillips and copied to your lab mentor (your "advisors").

Fall semester

- **By the end of each week (Saturday, 11:59 pm)** – email weekly report to your advisors.
- **Before the end of the second week (Saturday, 11:59 pm)** – email proposal (abstract, aims, and references) to your advisors.
- **Date TBA** (Time and location TBA) – informational meeting with the Bioc 310 instructor or writing consultant.
- **Last week in October** – email outline to your advisors and request feedback.
- **Last week of classes** – draft of research paper due to your advisors for feedback.
- **Due by the BIOC 310 final exam time slot (see registrar's exam listing for BIOC 310)** – final research paper and time sheet due to your advisors and uploaded to your BIOC 310 drop box.

Spring semester

- **Fall** – begin planning for spring semester (and summer research); complete and submit Student Agreement Form to your advisors.
- **By the end of each week (Saturday, 11:59 pm)** – email weekly reports to your advisors.
- **Before the end of the second week (Saturday, 11:59 pm)** – email proposal (abstract, aims, and references) to your advisors
- **Date TBA** (Time and location TBA) – informational meeting with the Bioc 310 instructor or communication consultant.
- **Late February** – if presenting a poster, submit poster abstract with title and author list to your advisors for review.
- **Early-mid March** – submit poster abstract and registration to RURS (check RURS website).
- **Mid-late March** – submit poster or paper draft to your advisors for feedback. If writing a paper, present an outline of your paper to your advisors for review.
- **First week of April or earlier** – if presenting a poster, print completed poster and present at RURS poster session.
- **Last week of classes** – if writing a paper, present draft of research paper due to your advisors for feedback.
- **Due by the BIOC 310 final exam time slot (see registrar's exam listing for BIOC 310)**
  –*Final poster* (electronically and printed as a single 8.5x11 inch page) and time sheet due to your advisors and uploaded to your BIOC 310 drop box.
  –or—
  —*Final research paper* and time sheet due to your advisors and uploaded to your BIOC 310 drop box.

Student agreement

Over the course of the semester, we expect that Bioc 310 students will:

1. spend *at least* 3 hours in lab per week per credit hour of Bioc 310
2. be intellectually engaged in their research
3. be familiar with the relevant research (read articles, confer with researchers)
4. understand the larger context of their work
5. perform experiments carefully and with an attention to detail
6. keep a detailed notebook and deliver to Prof. G. Phillips at the end of the project
7. be responsible with lab reagents and equipment

8. keep a regular lab schedule and inform their professor and bench mentor prior to an absence
9. be on time for meetings and experiments
10. work well with and be respectful of their bench mentor and other lab colleagues
11. complete clear and detailed weekly reports by Saturday night of each week
12. complete a thoughtful proposal abstract by the end of the second week of classes
13. present their research and research findings clearly and effectively in a final research paper or poster presentation
14. properly cite all contributions by others (published and unpublished) in all of their written work for this course, in accordance with course policies regarding plagiarism
15. share drafts with their research professor and mentor, giving them an opportunity to suggest edits and approve documents, prior to submission of any final copy of papers or posters
16. ask for clarification from their professor, mentor, and course instructor if they are unsure of any of their lab protocols or course expectations

In addition to the syllabus and course policy, all students are responsible for familiarity with the content of the Bioc 310 manual (www.bioc.rice.edu/bioc310/).

Honor code for Bioc 310

Guidelines for collaboration with colleagues: As research is a collaborative effort, you are expected to communicate with and receive input from others. While the work reported in your written materials should be your own, you may include data and figures produced by other members of your lab as background if they are relevant to your conclusions about your own research and are properly attributed to the individual(s) who produced them. Although many of the projects in a lab originate from a common starting point, your abstract, summary, and introduction should be in your own words and not simply copied (plagiarized) from existing lab documents.

Guidelines for proper citation of written work: Plagiarism is a form of academic fraud and is a violation of the Rice Honor Code. Forms of plagiarism include: copying a source word-for-word, inadequate paraphrasing without proper acknowledgement, and claiming another's ideas as one's own. Bioc 310 students are required to educate themselves in the use of proper citations in all of their written work by reading the following three sources:

- the Rice Honor Code information on Academic Fraud and Acknowledgement of Sources: http://honor.rice.edu/honor-system-handbook/
- the document, "Recognizing and Avoiding Plagiarism" by Dr. Janice L. Hewitt, which is posted in the resources folder on the Bioc 310 Owl-Space site
- the Bioc 310 manual sections, "When should I reference something?" and "How do I reference material from a review article?" written by Dr. Richard Gomer

Disability support

Guidelines for students with disabilities: If you have a documented disability that will impact your work in this class, please inform your research professor to discuss your needs. Additionally, you will need to register with the Disability Support Services Office in the Allen Center. For more information visit the Rice Disability Support Services site (www.dss.rice.edu).